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ACTINOMYCOSIS*

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Actinomycosis is a disease caused by the fungus actinomycosis bovis and is characterized by the formation of abundant granulation, connective tissue and multiple abscesses which discharge a characteristic exudate containing yellowish granules.

It was first demonstrated by Ballinger to be the causative agent of that disease known as lumpy jaw in cattle, in 1877. The following year, J. Isreal demonstrated the infection in man. The disease is widely distributed, having been found in every state in the union, but is more prevalent in the upper Mississippi Valley. The Mayo Clinic report 157 cases over a period of nine years.

There are several routes by which fungus may gain entrance into the body: by implantation of foreign body, through the inspired air, through an apical abscess of a tooth or through the alimentary canal. It has been suggested that it is a normal inhabitant of the oral cavity.

The fungus occurs in the tissue as rounded or spherical granules, which vary in size from .5 to 1 minn. in diameter. They are usually yellowish in color, hence the term sulphur granules. The granules when pressed between cover slip and slide, show a central mass of debris, pus and tangled filaments. Beyond this the club shaped refractive bodies and filaments may be seen to radiate outwards. The disease progresses in the tissue, forming small intercommunicating abscesses with many sinuses; large amount of granulation and connective tissue.

Diffuse inflammation is uncommon, but when the process is situated in the abdomen, large encapsulated abscesses sometimes develop. The process is usually very slow and indolent, with a large amount of indurated tissue, which breaks down very slowly. Metastasis through the blood stream is rather uncommon. The extension is usually by continuity.

The microscopical examination shows granulation tissue with a proliferation of connective tissue in which the ray fungus may be demonstrated.

Actinomycosis attacks all portions of the body but about 50 percent of the reported cases are of the head and neck; 20 to 30 percent in the abdomen and about 15 percent in the thoracic cavity.

The symptoms of abdominal actinomycosis are: anorexia, malaise, chills and sweats and pain of variable nature, nausea and vomiting. There may be either a diarrhea or constipation. The condition cannot be recognized until the process has developed sufficiently that the hard irregular mass can be palpated through the abdominal wall, or until it has ruptured with the formation of a sinus or fistula.

The principal diagnostic sign is the large, semi-tender, lobulated tumors which are localized in one area of the abdomen from which there is a draining sinus.

The majority of cases of abdominal actinomycosis are supposed to be primary in the appendix. From here there is a gradual spread throughout the abdomen and pelvis. However, there have been cases reported of a primary actinomycosis of the uterus following an abortion and cases of actinomycosis of the kidneys.

The differential diagnosis between an early actinomycosis and a ruptured appendix or a salpingitis is almost impossible. In our series of cases the diagnosis was not made until after operation.

It is at times difficult to find the sulphur granules. They are frequently absent in the discharge of the chronic draining sinus and to find them it is necessary to curette the walls of the sinus in which they are usually present.

In one of our cases the fungus could not be demonstrated until after the sinus had healed over and an abscess had form-

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ed. Upon opening the abscess the pus was full of the granules. The granules sink to the bottom and can be found by tilting the basin from side to side.

The most important single factor in the prognosis of actinomycosis of the peritoneum is the early diagnosis.

Actinomycosis of the cervical facial type shows a mortality of only 25 percent. The abdominal type is much more serious, depending entirely upon the time the diagnosis is made. The pulmonary form is by far the most serious; only a few cases of pulmonary actinomycosis have recovered.

TREATMENT

The prophylactic treatment should be the same as all other infections; care of the mouth and teeth, thorough antisepsis in caring for all punctured wounds.

Deep X-ray has been advocated to some extent, but it is not as efficacious as the treatment with iodides, coupled with surgical drainage of the abscess.

In our three cases, the two whom we treated; one has completely recovered and the other one is very rapidly improving.

CASE REPORTS

Case No. 1.—L. B., male, age 34. Lives on farm; entered hospital September 7, 1925. Chief complaint: Indefinite pain in right iliac region. Present illness began two months ago with aching pain in side, nausea and vomiting and what he considered a bilious spell.

Examination showed some tenderness over McBurney's point, no palpable masses in abdomen. Diagnosis of appendicitis was made and operation performed on September 7th. The appendix was found badly diseased, one inch long and the lumen almost obliterated. There was a chronic inflammatory condition in the wall of the caecum about two and a half inches in diameter by one-quarter inch thick.

The post-operative course was stormy; wound broke open on the 12th day and discharged considerable pus.

Patient returned two months later, when a mass was palpable in the abdomen; gave history of his wound having broken open two or three times since he left hospital.

Second operation showed indurated tumor size of a goose egg around caecum. A piece was taken for laboratory examination and due to the round cell infiltration and giant cells, a diagnosis of tuberculosis was made.

Patient returned about six weeks following the operation, at which time the whole pelvis was filled with an inflammatory mass. There was a draining sinus. We gave him rather a poor prognosis; he sought other medical advice; was operated the third time in March, 1926, and died following the operation.

Diagnosis of actinomycosis of the peritoneum was made at the time of the third operation.

Case No. 2.—C. S., female, age 15; lives on farm; entered hospital May 12, 1928. Chief complaint: Loss of appetite, headache, pain in side. Present illness: one year ago had a spell that resembled typhoid but ran a much shorter course.

Illness recurred 4 weeks ago; lost her appetite, complained of headache, pain in left side in iliac region, which radiated to midline, soreness confined to right side; temperature running to 104.5. Mother states her present illness is very similar to the illness she had one year ago.

Examination showed a large inflammatory mass in both adnexa. Diagnosis of chronic salpingo-oophoritis was made; operation May 12, 1928, revealed a large abscess involving the left ovary and both tubes. A second abscess in the broad ligament on the left side which had eroded into the fundus of the uterus, was found.

Appendix was buried in adhesions; both tubes and appendix were removed; the cigarette drain in the pelvis.

Microscopical examination showed the tubes to be chronically inflamed; round cell infiltration; diagnosis: chronic salpingitis.

Post-operative course was stormy; wound discharged. Patient returned two months later at which time she gave a history that wound had healed and broken open several times. Examination showed a large inflammatory tumor which could be palpated and extended up to the iliac crest.

Examination of the discharge showed no granules, but following a curettement of the sinus tract, the granules were found. Patient put on iodide therapy, improved very rapidly. Returned November 1st, at which time no mass could be palpated in the abdomen; patient healthy and apparently well.

Case No. 3.—L. O. Female, age 45, lives on farm; housewife. Chief complaint: Pain in left iliac region. Present illness: Began four weeks ago with sudden onset of high fever which continued for about two weeks; then stated that she passed considerable pus through her bowel, at which time her pain was relieved.

Pain and fever recurred three days ago and was brought into hospital at which time examinaion showed a large inflammatory condition in the pelvis.

Diagnosis of salpingitis was made; operation on February 2, 1929. Abscess found in each iliac region, involving both tubes and ovaries; appendix bound down into the mass; some erosion of the ileum which had been in contact with the appendix.

Microscopical diagnosis was pyosalpinx. Post-operative course was stormy. Left hospital in three weeks; returned for examination July 20th with history that wound had broken open and drained, then healed several times since dismissal from the hospital.

Vaginal examination showed a large indurated mass anterior to the uterus. The sinus at that time was healed over. Upon opening the sinus, the pus was examined and sulphur granules found; when examined microscopically proved to be the fungus actinomycosis.

Patient placed on iodide therapy; has returned for examination every two weeks. Last examination showed indurated mass in the pelvis about the size of an egg. General condition is much improved.

Case No. 4.—F. M. F. Male, age 43. Chief complaint: Draining sinus in appendiceal scar. Entered hospital December 27, 1929. Personal History: Always well; no serious illness; 3 healthy children living; one child stillborn.

Present illness: In 1922 had an attack of appendicitis and was in bed 45 days with ice bag on his side. Apparently completely recovered. Had some trouble with his side in 1928, which lasted only two days. Last attack began July 4, 1929. Went to hospital in Oklahoma City on July 16th, was kept in bed two weeks and then operated for ruptured appendix. Drainage was placed in the wound. Wound has continued to drain intermittently since operation. Patient complained of pain only at the time the wound was healed over.

Physical examination shows a well developed, well nourished man, age 43, conscious, rational, does not look sick. Eyes, ears, nose and throat negative. Heart sounds clear and strong, no murmurs. Breath sounds clear throughout, no rales. Abdomen: there is a draining sinus in old scar in right lower quadrant; some resistance to palpation over the whole right side and a nodular mass could be indistinctly palpated beneath the operative scar. Exploration of sinus showed it to be about four inches deep. Genitalia negative. Extremities normal. Pus was examined and several sulphur granules found. These, upon microscopical examination, proved to be the ray fungus of actinomycosis. Patient was seen in consultation and recommendation made for treatment but at such a recent date that no change in his general condition could be expected at the present time.

CONCLUSIONS

It has often been said that in diagnosis the errors of omission far outnumber those of commission. The function of this paper is to bring to mind the diagnosis of actinomycosis and emphasize that it is not as rare as it is generally supposed to be.

We have had four cases in the last four years and actinomycosis should be suspected in every case where there is a fistula of the abdomen draining from an irregular indurated mass.

PROSTATIC ABSCESS

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Abscess of the prostate is frequently undiagnosed and untreated. The result of this neglect is repeated suppurations with destruction of the gland, masses of cicatrical tissue, fistulas of various kinds, and even death. Chronic infection in this organ gives the same untoward results as focal infections in any other part of the body.

While more frequent in mid life, the author has seen two cases in patients passed seventy-five years of age and two in patients aged sixty-seven and sixty-nine respectively. Meredith Campbell, recently reported a case of a child twenty-eight months of age with a G. C. prostatic abscess, and Szenkier, a German author, re-

ports a case complicating typhoid in a two and a half year old child.

Neisserian infection is responsible for the larger percentage of these abscesses, yet many cases are due to a metastasis from infections in other portions of the body. Kretschmer has reported cases due to abscess of the finger, one due to tonsillitis, and one following suppurative appendicitis. Bandler, in discussing Peterson's paper at the A. M. A. in 1928, reported several cases following influenza. Herman and Carp are of the opinion that the non-gonorrheal abscesses are more serious and more often fatal than are those of the venereal type.

The injudicious use of sounds, massage, and posterior injections are the direct cause of many prostatic abscesses. The propitious time to begin massage and sounds is a question that many have not solved. The history of riding a horse, farm implements, or in a rough car is not uncommon.

The symptoms of prostatic abscess are very much the same as those of a circumscribed infection in any part of the body, i. e., chill, followed by fever, rapid pulse, increase in the leucocyte count, symptoms of toxemia with general malaise, and in addition we have the pain in prostatic region, retention of urine, the enlargement and extreme tenderness on rectal examination, and possible fluctuation. The above is a beautiful diagnostic picture that no one could miss, but unfortunately many of the symptoms are more frequently missing than present. Commonly, chills and fever are wanting. Many times the acute pain is nil, and I have opened more abscesses without fluctuation than with. To me, the dependable symptoms, calling for incision are: first, dull aching in the perineum; second, enlarged, tender prostate revealed by rectal examination; third, increase in the leucocyte count. Upon the above I have based many diagnoses and I have yet to incise without finding pus.

Now as to treatment. Stephenson has recommended and was O. K.'d by Keyes, that a small sound be passed into the urethra; the tip plunged in the lateral lobe on one side, then slightly withdrawn and plunged into the other. I will confess, that I have used this method on three or four occasions and "got away with it," when the patient refused a perineal operation, and hospitalization. This procedure is a makeshift, uncertain, unsurgical, and capable of doing more damage than good.

Barringer, in 1922, aspirated through a large calibre needle in case of G. C. infection and carcinoma only, and had favorable results in fifteen reported cases. W. G. Shultz has used the same method in G. C. abscesses, reporting good results in several cases, but adds the irrigation of the cavity with Dakin's solution, to the technic.

It is a well known fact, that many of the small abscesses that lie adjacent to the urethra will rupture spontaneously into the canal. I am inclined to think that because of these spontaneous emptyings, that many of us are prone to take the watchful waiting stand in our suppurations located more deeply within the substance of the organ. It is this delay that keeps the man from his work week after week, and leaves a gland with suppurating pockets.

To me, the method of choice is the same as would be used in incising an abscess in the throat, on the leg or any other part of the body, i.e., simple incision and drainage. Formerly I performed quite an operation incising the skin, separating, and retracting the muscles, thus baring the prostatic lobes as I do for a prostatectomy, then freely incising. I now use the much simpler procedure, reported by Livermore, of incising the skin down the median line, and with sound in urethra, and finger in the rectum as a guide, penetrate the muscles with a pointed hemostat or scissors, after which I open the blades thus enlarging my canal. I insert a small drainage tube and the operation is more quickly over with than it takes to tell it, and the pus always comes. The pain is relieved at once. The patient leaves the hospital on an average, the second or third day, and many times goes to work within the week. Drainage continues for a few days, but I have never had any trouble with sinuses or fistulas following. My results have been ideal.

Case No. 1.—Age 29, male, married, traveling salesman. Had a G. C. infection twelve or fourteen years previous at which time he was treated by a physician and has had no discharge until the present trouble. The patient had some abscessed teeth. He noticed a heavy dull feeling in the perineum when riding in his car, gradually becoming worse, and at the end of the second week a thin, pussy discharge appeared. He was treated by the local physician, who insisted that the pa-

tient had an acute Neisserian infection, although he vehemently denied same. Repeated smears taken from his wife were at all times found to be negative for diplococcus. Repeated smears from the patient's urethra showed pus and mixed bacteria but no diplococcus. Wassermann, from self and wife negative. The patient because of the pain in riding was forced to give up his job. The physician continued to treat for a specific urethritis for a period of nine weeks, when the patient was brought to Enid, where his parents resided. The physician to whom he went questioned the diagnosis of G. C. infection thinking of a T. B. condition, but was unable to find anything by rectal examination that would suggest an abscess. The patient was turned over to me after eleven weeks of invalidism. He complained of pain in perineum. On rectal examination the prostate was found to be tender, enlarged, but not extremely painful. I have seen many cases of hypertrophy that caused greater pain on examination. Both lobes were found to be flat and at no place was I able to find any sign of fluctuation. The doctor who preceded me had made repeated softness or fluctuation. Repeated examinations of urine and of the discharge was made for T. B. but found to be negative. The W. B. C. was 13,000. There was a dull aching in the perineum, enlargement and slight tenderness on rectal examination. I placed the patient in the hospital, made my customary incisions and when I separated the blades of the forceps evacuated about two tablespoonsful of pus. Convalescense began from the time of drainage of the abscess. The second day I had two abscessed teeth removed. The fourth day he was able to leave the hospital and was back on his old job in a week, although there was some discharge from the perinal wound, which lasted about a week longer.

Case No. 2—Age 28, single, salesman, G. C. infection three years ago, treated by a physician, and thought to be cured. A month ago could not pass urine and noticed a soreness and heaviness in the perineal region. He was catheterized, and treated with massage and sounds by a general physician. When the man came to me he had not worked for forty days. Urinated eight to ten times at night with much pain, particularly on finishing. Prostate very large and bare, and painful. W. B. C. 11,-600 and R. B. C. 3,960,000. Patient was operated by low perineal incision in skin, and blunt Mayo scissors inserted through muscles, and blades separated. About a tablespoonful of pus drained with clots of blood. Small rubber drainage tube inserted. The day following was little drainage, and patient was permitted to leave the hospital. The third day feeling good, drainage removed, and permitted to go to town. The seventh day he returned to work, but wearing a perineal pad. The tenth day a very few drops of discharge from the wound which shows an occasional pus cell containing a very few mixed bacteria. The wound closed the next day or two and treatment was entirely discontinued.

SUMMARY

1st. Prostatic abscess is a condition frequently overlooked and untreated.

2nd. While more prevalent in middle life, it occurs in young children and in the aged.

3rd. Many cases are due to metastasis, but are excited by trauma.

4. The symptoms of an aching in the perineal region, enlargement and tenderness of the gland, with a high leucocyte count justifies perineal incision.

5th. The simplest perineal incision, is the operation of choice.

6th. With incision pain ceases and invalidism that has lasted for months will be terminated within a week or ten days.

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INJURIES TO THE EYE

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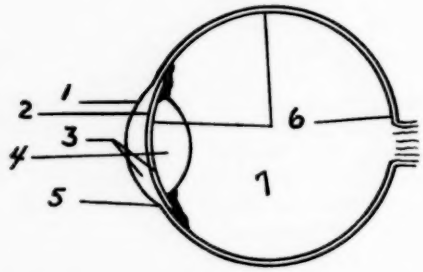

In the presentation of such common occurrences to the most important organ of sense we possess we wish first of all to call attention to some of the gross anatomy of the eye.

Injuries involving the anterior and posterior chamber, their limiting walls, and contents, that do not injure the ciliary body, usually result in recovery with a useful eye. It may cause a cataract, but as this can be operated, I consider this accident no reason to alter the above statement.

After considering the anatomy of the eye we wish to include all mechanical injuries in the following three classes: First, the superficial; second, penetrating; third, contusions. Of the superficial injuries the most frequently met are first, foreign bodies on or in the conjunctiva of the lids and ball and cornea; secondly, burns.

Every foreign body in the cornea has potential seriousness as to complete recovery of the eye. Hence it is always important to obtain history as to how long standing and note carefully the extent of injury and any resulting irritation caused therefrom.

Many serious complications may result from delayed removal with no attention given the existing iritis. Such injuries often result in synechia that can never be broken, impaired vision, and glaucoma, all of which could and should have been avoided by proper attention and treatment. Never remove a foreign body with a swab or by brushing. Use a spud or some sharp pointed instrument and lift it out of its bed. If possible without too much injury always remove stain caused by iron oxidation. This in many cases causes no trouble but in many healing will be delayed until it sloughs or is removed.

One should ever keep in mind that one of the most painful injuries is an abrasion or laceration of the corneal surface from rubbing with foreign body in eye, or from a scratch of a hard object that has grazed the corneal surface. These must be stained to be seen. The pain accompanying such injuries will require holocain or some similar drug, for from 24 to 72 hours, After the removal of a foreign body the treatment consists of the instillation of some mild antiseptic which in a majority of cases is sufficient.

In all cases where there is an iritis atropin should be instilled to produce dilatation of the pupil and relieve pain.

No. 2. Burns of the cornea and lids, usually caused by acids or lye, have by the time the patient is seen by the ophthalmologist resulted in all the damage they are due to produce. If seen immediately following the accident, they should be freely washed with water or better a weak solution of alkali or acid, determined by causative agent. Indelible lead pencils are usually a basic dye but some are acid and it is impossible to tell which one has caused injury, consequently to wash thoroughly with water is probably the best treatment.

The after treatment of a burn of the eye is the same as elsewhere. It resolves itself into the relief of pain and irrigating with cleansing mild antiseptic solution.

In dealing with the second division, penetrating wounds, we are confronted in every case with one of serious complicating probabilities. If the injury occurs to the anterior part of the eye, anterior to the ciliary body, is seen early and is removed with little trauma, in case it is in the eye, and no infection occurs, results will be gratifying. If, however, the punctured wound was caused by something that has carried with it infection, as a stick or the beak of a bird, the results even though carried out with strictest antisepsis and asepsis will be very disappointing.

The treatment consists of removing the foreign body if within eye, taking care of the iris, excising that portion protruding, suturing if deemed best at limbus and covering cut in cornea with conjunctival flap. In cases where the perforation has injured the ciliary body, choroid or vitreous, any or all of these structures, the chances of recovery of a useful eye probably fall below 50 percent, as these structures, are very intolerant to any manipulation. If we successfuly remove in these

cases, whatever the offending body has been our prognosis should be very guarded. Lacerated wounds heal less promptly in the eye than elsewhere. In caring for these injuries good judgment and hearty cooperation of the patient is a very necessary adjunct to the treatment.

On the third division—contusions—rest the heavy responsibility of many blind eyes. A contusion may cause hemmorhage from iris, ciliary body, choroid or retina. This may further result in retinal detachment, hemmorrhage into the vitreous, into the nerve head, with resulting complete, temporary, or partial blindness, according to location and severity. Dilatation of pupil points to injury of sphincter, trembling iris to luxated lens. In many of these cases it is impossible to make a diagnosis of the magnitude of the injury for a few days, owing to the presence of blood. Use no atropin in contusions of the eye unless iritis demands it. Use cold and give salicylates and instill dionin.

CONCLUSIONS

1. Every eye injury, no matter into which class it falls should be watched daily for any sign of irritation until well.

2. All penetrating wounds should be studied as rapidly as they will permit. When injury is limited to lids, cornea, iris and lens, one in most cases may expect good results. If injury has involved ciliary body choroid and vitreous, the prognosis is not better than 50 percent under best care.

3. Injuries should be cared for here immediately as in any other part of the body.

4. After acute stage always take field to determine extent of lesion and note carefully details of fundus.

5. Take tension of eye, as lowered tension is present in penetrating wounds.

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ONE REASON WHY ENTEROSTOMY MAY NOT FUNCTION

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This is not meant to be an article on ileus, but an observation in regard to one phase of its treatment which I happened to observe in one case, and which I believe, may be the reason for failure to obtain satisfactory results in some cases.

Ileus is a quite common and fatal condition, if not recognized early and relieved promptly. Cases outside the hospital can rarely be gotten in early, because, until attempts have been made repeatedly to move the bowels, the patient will not move. Obstruction occurs quite frequently in the hospital. Post-operative ileus is a frequent complication following lower abdominal infections, such as salpingitis and gangrenous appendicitis. In inspecting the massive adhesions which sometimes follow these infections, it is strange that it does not occur oftener. These cases are not operated for some hours at least, because one naturally hopes that the obstruction is partial and can be relieved, and it is not usually possible to be entirely sure of the condition until after some hours. So the ordinary case of intestinal obstruction is usually quite distended before it comes to the operating room. This distension makes abdominal exploration difficult, even in the early cases.

The cases of longer standing do not stand an anesthetic or intra-abdominal manipulation, well. Then too, if post-operative and following an infection, relief of the obstruction at its source is quite often not practical, not only on account of the condition of the patient, but because of the danger of turning loose a walled off and localized infection. So I believe the usual procedure, and much the safest one is to do an enterostomy under local anesthesia and relieve the immediate condition, and re-operate later, if necessary. Most of these obstructions are kinks and relieve themselves promptly after the enterostomy begins to function, and if the enterostomy is kept open for about three weeks, usually nothing further is necessary. If the condition of the patient becomes rapidly grave, some strangulation of the intestine can be suspected, and if on opening the abdomen, the fluid is bloody, we can be quite certain that a loop of bowel is strangulated. If so, of course it must be sought for and the strangulation relieved, and if the intestine is gangrenous, it must be removed, or at least delivered outside of the peritoneal cavity. However, in most instances, the condition is a kink, and enterostomy is both easier and safer to do, and is all that is necessary.

Now, usually, if the obstruction is not of too long standing, the enterostomy drains freely, the vomiting, colic, etc., promptly subside, and after two, three or four days, the bowels move. However, occasionally, although the enterostomy drains immediately after it is made, and

appears to be satisfactory, the next day it drains poorly and the patient does not do well, and in these cases, a second enterostomy, higher up in the intestine becomes necessary. Some months ago I had such a case following gangrenous appendicitis. The usual procedure was followed. A catheter was introduced into the ileum about its middle, the point of the catheter extending down the intestine and the catheter buried in the intestinal wall. It is usually recommended that the catheter be placed in the long axis of the bowel, with the catheter protruding into the bowel in the direction of the normal current, and the valve made in the bowel above, so as to produce a valve which will close with peristalsis, after withdrawing the catheter. In this case, the drainage, immediately following the operation was quite free, and symptoms were immediately relieved, but during the night there was very little drainage, and the next morning, practically none, and the child had again developed all the typical symptoms of ileus.

The wound was re-opened and the loop of bowel into which the catheter had been sutured, was delivered. Everything appeared all right. The catheter was not occluded, but still it did not drain. The intestine above the enterostomy was distended. A clamp was put on the distended intestine about a foot above the enterostomy, and pressure applied to the bowel below the clamp. Nothing could be forced by. There was a complete obstruction at the site of the enterostomy. Only a small part of the caliber of the bowel had been included in the suture, and on examination I could see no reason whatever, for the obstruction. Apparently following the placing of the catheter in the bowel and the suturing around the catheter, there was a slight tendency of the bowel to kink. This, together with the edema following the procedure, had resulted in a water and air-tight valve. I left the catheter in place and made a second enterostomy, somewhat higher in the bowel and this time introduced the catheter into the bowel with the point extending upwards, instead of downwards. Drainage was immediately free and symptoms were promptly relieved. A few days later, the first catheter began to drain, due, I suppose, to the subsidence of the edema in the bowel wall, and shortly after this, her bowels moved naturally.

I have wondered since this time if this is not the explanation of the occasional failure of an enterostomy done in this manner to function. Since that time, I have introduced a catheter with the point extending upward, instead of downward in the bowel. Drainage in each case has been satisfactory, and there appears to be no difference in the amount of leakage, or the time of closure, after withdrawal of the catheter.

ARTHRITIS DEFORMANS

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Arthritis deformans, chronic arthritis and rheumatoid arthritis are used by different authorities more or less to describe the same conditions and may be considered synonymous for the purposes of this paper. By the rheumatoid or atrophic form is meant, not only atrophy of bone, but also of all joint and periarthrial structures, atrophy of the skin, and particularly atrophy of certain muscle groups anatomically related to the joint concerned.

Starting with acute inflammation of the joints, atrophy of the muscles appears with great rapidity; it may even appear before the joint inflammation. The distribution of the lesions is symmetrical; the course is chronic and progressive, interrupted by acute exacerbations, also symmetrical. In the late stages there is atrophy and contracture. Ankylosis, which may be extreme, is not caused by bony change, but by atrophy, contracture, fibrosis and dislocation. An almost total wastage of certain muscle groups is seen in the course of a few weeks in rheumatoid arthritis.

Chronic joint diseases have always offered difficulties from the standpoint of etiology and experimental study, as well as from the viewpoint of treatment. There are always cases of this character in the practice of all physicians and in the wards of any hospital; particularly in those of the general and charitable class. They represent, in most instances, the result of previous treatment or lack of treatment. Possibly the physician is discouraged as his results have been unsatisfactory, both to himself and to the patient, and the patient is passed along, similar to a tubercular case until he drifts into the hands of the charlatan.

The investigations of Billings and others, confirm the present view of many physi-

cians, that arthritis is an infectious disease, generally caused by strains of streptococci, which are usually non-hemolytic and of low virulence, and occasionally by staphylococci and by non-pyogenic strains of gonococci or other bacteria. The bacteria reach the joints through the blood stream, lodge in the small vessels of the periarticular tissues, the terminal vessels of the serosa of the joints, without forming a purulent exudate and may enter the nutrient artery supplying the epiphysis of the bones.

The result of the bacteria in the blood of the host is dependent upon the virulence of the same, and on the number of bacteria in the blood stream. The resistance of the host may be diminished by exhaustion, debility from overwork, starvation, infectious diseases, such as pneumonia, typhoid fever, erysipelas and puerperal infection. The severity of the joint infection depends upon the virulence of the bacteria, and the number which reach the tistues of the joint. The deformity is generally due to bony overgrowth, tucking and contracture of the capsule and tendons, overaction of the flexor muscles, hyperextension, muscular contraction, and even fixation, which is almost immobilizing to the joint. All these are produced by infection.

The progressive character of the disease is explained by the persistence of the etiologic foci, through failure of eradication or failure to locate or to apply treatment to correct tissue defects. Jones and Jones emphasize the importance of fibrositis as the underlying and characteristic phenomenon of this disease, and that it is fibrous tissue which is primarily concerned in these conditions, whether in the muscle, nerve, cartilage or bone.

In recent years great emphasis has been placed upon the importance of focal infections, such as pyorrhea, teeth, alveolar abscesses, septic tonsils, infection of the paranasal sinuses, and infections connected with the alimentary and genito-urinary tracts, gall bladder and the prostate. Some authors believe that infection is not the primary fault. This is to be found in a condition of the mucous membrane, which lowers its resistance to invasion by germs and so gives rise to a sub-infection. Everyone is familiar with patients who from their earliest years appear to have an increased susceptibility to infection of their mucous membranes, who have what may be termed a "catarrhal" or "mucous diathesis." But in most cases it is probably acquired, and the interesting suggestion has been made that it is due to a deficiency of vitamins.

There is also a disturbance of the endocrine secretions. During the active phase of the disease there is usually evidence of hyperthyroidism, which causes a lowered sugar tolerance, and lowered sugar tolerance not only aids infection, but is also caused by infections, shock, anxiety and worry, so that a vicious circle is set up. Many patients have hypochlorhydria, and this increases the possibility of a gross infection of the small intestine, especially in the presence of swallowed septic material.

The deforming process is slow and preventive treatment in this respect should not be delayed. The deformities are the result of muscular spasm, faulty posture, and eventually, anatomical changes in and around the joints. As a general rule, muscular spasm produces flexional deformity because the flexor muscles are stronger than the extensors, and also because slight flexion is the most capacious and most comfortable position for most joints. Spasm of the muscles cannot persist for years, but the deformity of the joint persists long after the pain that first set up the muscular shortening has passed. The practical point is that the shortening of the muscles can always be overcome by gradual stretching with weights or splints, and is never enough to compel operative interference, though this may sometimes be expedient for economic reasons. Ulceration of the articular cartilages always precedes ulcerations of the underlying bone and begins where pressure is greatest.

When the hands are the seat of the deforming process, there is a tendency of the fingers to be deflected externally, i.e., towards the radius, and to overlap one another, the thumb remaining free. They may improve for a while, then undergo exacerbations, with new periods of remission, but each access seems to augment their size, and the discomfort they cause, finally leading to the formation of hard projections (Heberden's Nodes) on the phalanges which usually result in marked distortion of the fingers.

The heart muscle taking part in the morbid process, sometimes produces cardiac complications. The nervous supply of the areas involved being itself the seat of morbid changes, parenthesia and eviden-

ces of impaired nutrition of the skin and nails may appear. The vertebrae are often affected, causing a well established form of arthritis known as Spondylitis Deformans. The gastro-intestinal canal may also be disturbed, due mainly to involvement of the gastro-intestinal musculature in the general myositis. The dominant trend is a progressive localized autolysis of the synovial membranes, cartilages, and bony tisisues of the joints with the formation in and around them of osseous proliferative masses and adhesions which deform them and inhibit more or less their functions.

The clinical picture depends on the point and degree of advancement of the disease, but when this is well established, the patient is more or less bed-ridden, knees, shoulders and ankles have limited motion, the knees are enlarged, the hands show irregular swelling of the knuckles and the interphalangeal joints, the wrists are almost ankylosed, and there is pain on motion, and even at rest.

Significant advances have been made in the treatment of arthritis and the relegation of patients suffering from this disease to the class of "hopeless chronics" has been practiced too often by many conscientious, yet less painstaking physicians.

TREATMENT

In the management of this disease each case is an individual study.

1. Steps to remove or combat the focus of infection.

(a) Teeth. Too much emphasis cannot be placed upon the importance of having cases studied by the dentist and roentgenologist in the most thorough manner, for foci in the mouth may exist, which appear trifling on their own account and yet may be productive of serious consequences.

(b) Tonsils should be subjected to more than mere inspection as relatively trifling crypts may harbor necrotic material, which acts as culture media for bacteria.

(c) Ears should be examined by one trained is this line of work.

(d) Accessory-sinuses should be studied by inspection and by the X-ray.

(e) Appendicitis, bowel disorders and gall-bladder diseases should always be eliminated as possibilities.

(f) Sir Arbuthnot Lane suggested the origin of arthritis to be in the anatomic aberrations of the bowel, and Smith has reported benefit following ileocolostomy and even colectomy. This latter treatment is of such severity as to make its general application extremely limited. Practical therapy may be directed toward assisting the function of the bowel by the use of petroleum, cascara, agar-agar, (when sprinkled over food or given in the form of Mansfield wafers, frequently stimulates peristalsis, by its property of absorbing water and thereby increasing intestinal content and bulk). Abdominal support is useful where there is weakness in the abdominal wall and ptosis of the viscera.

(g) The genito-urinary tract may conceal a boggy prostate gland, a low grade infection in the seminal vesicles; or in women, in the purulent discharge from the cervix or an involved Bartholin gland. All of these, if present, should receive vigorous treatment.

(h) Buckley of London says that the origin of infection in cases of chronic infectious arthritis will be found in the mouth, throat or naso-pharynx in 95 percent of cases.

2. *Dietetic.* Fletcher has pointed out that the relationship of sugar tolerance to the effect of reduction in diet showed that the response to reduction in diet is proportionate to the reduction of sugar tolerance. It is thought that in a case with low tolerance, one may expect to offer good prospects for improvement. Carbohydrates and proteins should be administered with the patient's well-being as a guide, adhering to bread, water, sugar, milk, roast meats, fish, rice and potatoes. The injurious matter which reaches the tissues is most frequently of carbohydrate or protein origin.

3. *Vaccines and foreign proteins* have had much exploitation in recent years in the treatment of the various arthritides. Vaccines act in these low grade infections by stimulating the system to an increased defensive, which overcomes or checks, in turn, the development of the organisms. Obviously, it should follow that the exhibition of these products should not be manifested in acute and overwhelming infections. The determining of dosage should be done by producing a reaction, characterized by fever, chilliness, malaise, headache, and a possible exacerbation of all symptoms followed by relief. The reaction should be marked, but not so great, as to embarrass the condition of the pa-

tient. Theoretically, an autogenous vaccine is one of choice. However, on account of the difficulty of determining the causative organism in this disease in many instances, and because of the time consumed while awaiting its isolation, a polyvalent stock vaccine may be employed. Buckley has reported some favorable results following the use of stock vaccines, especially when accompanied by daily doses of thyroid gland extract. There is no uniform dosage recommended, but the initial dose of 500,000,000 killed organisms should be given until a reaction is secured. The interval between administrations is generally one week. If benefit is not apparent in a reasonable time the vaccines should be abandoned.

Foreign proteins in various forms have been given with some success as reported by Miller and Lusk, and by Joseph Eidlesberg. Solutions of proteose and typhoid vaccines were used by the former, and milk by the latter. Arthritides of various types have been treated by using foreign proteins including horse serum, antimeningococcic serum, typhoid vaccine, bacterial filtrated, phylacogens and milk.

4. *Glandular Therapy.* Volumes have been written upon the influence of the endocrine glands upon metabolism and arthritis. Thyroid extract has been used as reported by Buckley, Pemberton and Lamarque. However, the work of Cecil, Barr, DuBois, Soderstrom and Mageil does not indicate that arthritis deformans is a disease of metabolism and that it is not accomplished by an increase in the metabolic rate.

5. *Medication.* Iron, strychnine, and tonic drugs are frequently used with some benefit to maintain health at a point where discomfort is reduced materially. Arsenic in the form of Fowler's solution 1 to 2 minims t.i.d.p.c. or 1-2 of a grain of cacodylate of soda, frequently improves anemic conditions which accompany this disease. Colchicum and lithium are little used and of little avail. The salicylates, aspirin, atophan, cinchophen and pyramidon are useful but of limited value. They relieve pain very materially, but continued over a long period are apt to interfere seriously with digestion. Iodine and iodides have been used in arthritis with indifferent success for many centuries. However, sodium iodide, as pointed out by Osborne is preferable to the other preparations. Its usefulness has been reported by Elmore and others.

6. *Elimination.* Free elimination is indispensable to assist in ridding the body of toxins. Free action of the bowels should be maintained without vigorous purgation and depletion. Water should be taken freely. Free diaphoresis by the use of baths, electric pads, cabinets and therapeutic lamps, is of much benefit, if persistently employed, but should not be used to the point of exhaustion.

7. *Local Therapy.* (a) Heat applied as above mentioined gives great relief, if not used to the point of exhausting perspiration. (b) *Medicinal Applications.* Counter-irritants give temporary and subjective relief and may be applied with benefit. Methyl-salicylate ointment, iodine ointment, guaiacol ointment, iodine petrogen, mesotan, and any counter irritant of the many of our pharmacopea may be used. One should always avoid injury to the skin by too frequent or too vigorous application.

(c) *Massage* is invaluable in restoring atrophic muscles, if judiciously applied, by the doctor as well as by the nurse. The movement of a joint is as directly dependent upon the ability of a muscle to act, as it is upon a perfectly functioning articular structure. Massage takes the place of exercise, in a sense, and combined with whatever passive and active motion may be instituted, improves the muscular and systematic metabolism. Many ingenious mechanical devices have been manufactured by physicians interested in these diseases and their more progressive treatment, with which to accomplish and promote passive motion. We deplore, however, the forcible breaking up of an ankylosed joint, under anesthesia.

Rest. This element of treatment is to to be employed following periods of more or less activity and if not carried to the point of adding atrophy to the muscles, with more limitation of motion, it is highly beneficial. The supervision of motion the application of casts, splints, of rest and general management in conjunction with the counsel of a skilled orthopedist, is in many instances, a very desirable and helpful combination.

Climate. Patients suffering from chronic infectious arthritis invariably do better in a warm dry temperature than in localities where there are abrupt changes and where there is much heat, cold and humidity.

Electricity is employed in this disease

with considerably good effect. It is claimed by those familiar with this form of therapy, that the various currents available, produce certain beneficial results. Thermic effects of high frequency currents are probably the most marked of the sources of electrical energy. The physiological effect of this heat upon the tissues, is derived from the increase in blood supply. This hyperemia has a tendency to persist with its benefical effects for a long time. The mechanical effect upon cell structure is due to the thermic effect phenomena and the passage to and fro of active electrons, through the tissues. In these joint involvements, the circulation is thereby improved, metabolism and promotion of elimination of toxic poisons which may have caused or aggravated the condition, is accomplished. The growth of germs is restricted and infiltration is removed by the more active metabolism in the joint structures, by the establishment of active circulation.

Radium applied, and matter activated with radium added to water has marked effects as observed by Gottlieb at the large radium mine at Joachimathal among miners. William Armstrong of Buxton, summarizes the effects as: (1) increased diuresis; (2) increased exhalation of carbonic acid gases; (3) lowered blood pressure; (4) decreased viscosity of the blood; (5) increased activity of peptonizing ferments; (6) autolysis; (7) inhibition of pains of joints; (8) solvent action on gouty deposits.

At The Mayo Clinic the patients are treated to weekly lectures, outlining the fundamentals in the structure of the joints, the physiology of joint mobility, the nature of focal infection and the relation it bears, removed or unremoved, to their systemic infection, the role of baking, massage and exercise. They do not instruct patients to hope for a cure, but they do instruct them to consider their ailment as a tuberculosis patient considers his—one which demands common sense living and an attempt to restore all bodily functions to normal or to keep them as nearly normal as possible. Special diets for correction of constipation, overweight, or undernourishment, orthopedic and medical supervision and radical removal of foci are urged. Dr. Hench claims that this gives peace of mind while admitting that ease of pain is impossible.

AURICULAR FIBRILLATION

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ENID

Perhaps the same cannot be said of auricular fibrillation, concerning its increased frequency, as has often been said of the increase in the frequency of cancer. It is the opinion of most scholars of medicine, that cancer is not on the increase to a marked degree, but that the average physician is finding it sooner by sharpening his sense of perception. Most men, however, are of the opinion that there is an actual increase in the number of heart diseases, and especially that type of functional heart disease known as auricular fibrillation.

Undoubtedly one of the most fascinating phases of medical literature which anyone can pursue, is that most human aspect which is displayed by our greater investigators. It is the rule, rather than the exception, that the greater contributions are made by men who can appreciate the more practical side of pathological physiology. In other words, that small group of practitioners who are able to profit by their experience. It is true beyond a question, that one finds, upon reviewing medical literature, that a vast majority of the greater contributions have come from men who possess that rare and valuable power of clear practical reasoning, and are not prone to be ultra-scientific; which in the end is the least scientific. And so was one of our most beloved forefathers of medicine, Sir James MacKenzie. This most colorful individual went about his practice and made practical observations, which were held to be absurd by the so-called giants of medicine. These experiences, have however, shown themselves to be of inestimable value to the human race. Doctor Mackenzie was the first to clinically observe the conditions of irregular irregularity of the heart-beat, and recognize its potentialities. He differentiated regular irregularity from irregular irregularity, and was able to show clinically that the former was of little significance from a standpoint of severity and that the latter was of great significance. He was able, by his ingenious devices and his keen sense of detection, to observe that the auricles reached a state of circus movements rather than their usual regular contractions. By virtue of this condition the ventricular muscle was

unable to receive regular and standard impulses over the atrio-ventricular bundle, which condition gave rise to an irregular contraction of the ventricles. He first named this condition auricular paralysis, but later changed it to the "Auricular Fibrillation." He recognized it to be a disease coming under the classification of pathological physiology.

Under normal conditions the heart-beat receives its primary stimulus from a small mass of highly specialized tissue, which is situated in the right auricle at the junction of this chamber with the superior vena cava. This node is called the "pace maker" of the heart and from its impulses the rate and rhythm of the heart are directed. The impulse given by the sinus node is followed by a wave of muscular contraction which spreads throughout the right and left auricles. It is then conducted to the ventricles over the atrio-ventricular bundle. This structure is composed of both muscular and nervous tissue. It begins at the node of Tawara, which is situated low down, and to the right of the inter-auricular septum. It continues downward to the inter-ventricular septum where it divides into right and left branches, and they in turn subdivide into end branches which terminate into the fibers of Purkinje. Thus, are the normal heart rate and rythm made possible. The sinus node issues the impulse and is, therefore, the director, under normal conditions. We do know, however, when there is a defect in transmission along the route of this conducting mechanism, that the auricles as well as the ventricles are capable of establishing their own independent rythm.

A concise understanding of the process responsible for auricular fibrillation is not at hand. There is some relation between this condition and a failure of the myocardium. A chronic myocarditis may give rise to the same clinical manifestations. There is a more or less relationship in some cases between auricular fibrillation and infection. Usually in individuals thirty to forty years of age who show manifestations of this condition there is a history of some form of rheumatism. The tonsils, gall bladder, appendix, teeth and other sources of infection receive the burden of the blame. There is a definite group of individuals, however, usually fifty years of age and older, who suddenly show such a picture and give no history of infection. In the present state of our knowledge no satisfactory explanation of this condition is at hand. The above classification at the best is very unsatisfactory.

These patients come to the physician showing acute cardiac failure. The classical shortness of breath, cyanosis and edema are present. The right border of the liver is down one to four fingers. The heart is large and any murmur or group of murmurs may or may not be present. The most significant finding, however, is the presence of a wholly irregular irregularity of the heart-beat. The fact that the rate at the apex often exceeds the rate at the wrist seems to clinically substantiate the belief that the heart muscle errs from that characteristic which it is so dutiously supposed to possess, namely, the following of the all or none law. There are many other clinical conditions which are in accordance with this belief, but the dispute of a satisfactory laboratory experiment is beyond the scope of this paper.

The direction of treatment of these cases is of extreme importance and one is appalled when he recognizes that the majority of them are improperly treated, and in the face of a well defined systematic and entirely satisfactory routine, in most instances. Properly treated, the physician is able to view his work with a great deal of satisfaction. In many cases he is unable to initiate a cure, but he is able to bring about relief and comfort and restore useful individuals to reasonable activity. The proper treatment of these cases can be discussed under three headings, all of which are to be looked upon with about equal importance. If one of these procedures is carried out without the other two, the treatment is only one-third done and of very little significance. They are: rest, the proper use of digitalis and re-education which causes to be brought about the establishment of a routine of activity, which is satisfactory to each individual.

The word rest has a more significant meaning than placing a patient in a recumbent position. This patient should be put to bed and relieved of all physical and mental hazards. This is positively essential to assure cardiac rest. This patient should not be allowed to leave his bed or to sit upright, under any circumstances, until he has shown a very marked clinical improvement. It falls within the scope of the physician's duties, to see that this patient does rest. Opiates or rather drastic sedatives may have to be resorted to. We have found luminol to be very satisfac-

tory, and use it as a routine. We use it in one-half grain doses, as frequent as is necessary to keep the patient quiet and satisfied.

The proper use of digitalis is the second factor in the treatment of this condition. It must be given in suficiently large quantities, enough to bring about a therapeutical effect. Digitalis has a specific and selective action on the cardiac mechanism, acting upon the vagus, directly upon the heart muscle and upon the atrio-ventricular bundle. It slows the heart when the heart is too fast. It causes the individual heart-beat to be of greater force, receiving a greater volume of blood and more completely expelling the same. This is brought about by the restitution of the normal mechanism. Authorities have agreed that these cases should be digitalized. They have also agreed that 15 cc. of the standard tincture are required per hundred pounds body weight, in order to bring about this effect. It is given, one-half the total amount necessary, at the first dose, one-half the remainder at a subsequent dose and so on until the whole amount is taken. Then the patient is given just enough of the drug to supplant that amount which is excreted. This is an individual problem and must be worked out in every case. Some may be beautifully carried on fifteen drops three times daily, others will require twice that amount.

By the correct institution of the above two procedures, the patient is brought to a good clinical condition. At this point he presents the real problem. He probably thinks it imperative that he resume his activities as previous to his illness. This procedure is, of course, out of the question. He should be told that his condition is always potentially serious. He must constantly realize that his heart is not in a normal state, and will never be, but he has the opportunity to live for a long time and be comfortable, if he sees fit to follow a definite routine. He should not allow himself to be depressed over the fact that his heart is diseased. He must refrain from all forms of strenuous exercise. The writer calls to mind a case, the history being about as follows: This man was fifty years of age, he suddenly became ill, and showed upon physical examination, that he had an auricular fibrillation. He was exceedingly fortunate, for two reasons: First, he himself was a sensible man, and more important he was being handled by an able physician. After he had improved, his physician told him that if he would retire every evening at 8:00 p. m., and arise each morning at 8:00 a. m., if each afternoon he would undress and go to bed at twelve (noon) and remain until 3:00 p. m., he would predict a long and comfortable life. This patient carried out this suggestion to the letter, he lived for twenty years, and was most successful with his business, remaining at its head throughout his life.

It is not our opinion that one is justified in marking these cases invariably as having a hopeless prognosis. Such is true too often, no doubt, but in many instances their response to intelligent treatment is very excellent.

In the recognition of this and other cardiac conditions, the physician must train himself from a clinical standpoint, observation and physical examination far exceed, in importance, other procedures of cardiac diagnosis.

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THE CARE OF OUR PATIENTS BEFORE, DURING AND AFTER CONFINMENT

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I offer no apology for selecting this subject for a paper. I am sure no part of medicine has been neglected as much.

In no branch of medicine does the physician, young as well as old, feel confident of securing results as he does in obstetrics. Certainly in no other field of medicine does the doctor take as much for granted and risk as much as he does in the practice of midwifery. The reason for this is that pregnancy and labor are considered to be normal processes and in large proportions seem to be. However, facts disprove this.

In this country about 20,000 women and about 250,000 babies lose their lives yearly as the results of childbirth. Furthermore, of the women who recover, fully one-half suffer for years from the effects of labor. Most of the gynecological operations are necessary because of the damage resulting from labor. Nowhere in nature do we find a normal process which

is associated with a frightful number of deaths and with as much permanent invalidism as results from childbirth. For this reason we cannot call labor a normal process.

Prophylaxis is most essential in pregnancy and for its success, education of the populace is necessary.

During pregnancy there are certain fundamental things a physician should do. First of all a careful history should be taken. Family history. The childbirth experience of the patient's mother and sisters. The patient's past history, especially infections or operations, more particularly abdominal ones. If the patient is multipara, her past obstetric history is important. As a rule a woman will show her obstetrical form in her first labor. A history of miscarriages and their time of occurrence.

The next thing is a careful physical examination: heart, lungs, teeth, tonsils, sinuses, etc. A history or evidence of gonorrhea or syphilis.

Of great importance is the special obstetrical examination. This should include external measurements and an abdominal and vaginal examination.

The patient should see the physician every four weeks. During these visits the blood pressure should be taken, urine examined and the general health of the patient observed. From time to time the abdominal examination should be made and the fetal heart auscultated.

Certain information should be given the patient on her first visit. This is probably best given in printed form. The patient is told to regulate her diet so as to eliminate as much meat and other proteins as possible. She should drink an abundance of water and see that her bowels move daily; a certain amount of light out-door exercise. The clothes should be of such character that there are no circular constrictions anywhere. After motion is felt the corset should be replaced by a light abdominal support which tends to elevate the uterus. During the last three weeks the tub bath should be forbidden.

The physician should note if any of the following symptoms arise: Edema, severe headaches, visual disturbances or epigastric pain. Of the complications which may arise during pregnancy very little can be said in this paper. The usual disturbances are: toxemia, including excessive vomiting and eclampsia, pyelitis and placenta previa; but fortunately they are not very common.

When a woman goes into labor the best place for her is the hospital. Unfortunately, however, most women are still delivered at home. You will agree that asepsis and antisepsis are the basic principles. In the home they are difficult to carry out but there is no doubt that they can be practiced effectively.

When called to a patient in labor respond as quickly as possible. A careful abdominal examination is made to determine the exact presentation and position of the child. A rectal examination should be made to determine the amount of dilation of the cervix; whether the membranes are intact and the station of the head. The blood pressure should be taken and the urine examined.

The general plan of treatment in the first stage is one of watchful expectancy. If the pains are very strong and delivery is not expected for several hours, it is advisable to give morphine. The bladder is to be watched and the patient encouraged to void every hour. A full bladder may interfere with the progress of labor. The patient should not be permitted to bear down during the first stage, as it is useless and will waste her strength. Furthermore, these expulsive efforts do harm by forcing the undilated cervix downward and prepare the way for a future prolapse. Throughout labor one must watch for signs of trouble.

In the first examination made during labor, it is essential that a contracted pelvis be recognized. If, at the onset of labor in a primipara, the head overrides the pubes, trouble may be expected. An effort should be made to determine whether the head can enter the pelvis. If there is evident disproportion, a Cesarean section should be done. If uncertain, the patient should be given a test labor to see whether the head will enter the pelvis. If it fails after a reasonable length of time, abdominal delivery is advisable.

Another condition which should be recognized early is that of occiput posterior. Fortunately, most of these heads rotate anteriorly and deliver spontaneously. More babies are lost from occiput posterior condition than from any other cause.

First of all the type of labor may give a clue; the pains are weak and irregular, and there is an early rupture of the membranes. The head remains high for a long

time, dilation of the cervix is incomplete, because the head does not fit well. Abdominally, a distinct hollow over the symphysis may be seen, the shoulder is far back from the midline and the foetal heart tones are usually deep in the flank; but may be heard on the opposite side. The small parts are very prominent, anteriorly.

Internal examination will reveal the head high up, partly deflected; the large fontanelles being more accessible than usual because it is nearer the center of the pelvis. The small fontanelles are near the sacrum. After complete dilation occurs, the head should be rotated anteriorly, then the forceps applied, an episiotomy done and the head delivered. In breech cases, a policy of expectancy should be pursued.

In multiparas very little trouble will be encountered; but in primiparas there is a large foetal mortality and a high maternal and foetal morbidity. One should not interfere until the buttocks have been delivered over the perineum. In all primiparas, if the baby is large, a deep episiotomy should be done. Pulling on the child's neck is bad practice and may result in paralysis. Pressure on the child's head from above is the essential thing in the delivery of the aftercoming head. If the head is in the pelvic cavity and difficulty is encountered, forceps should be applied.

While it is generally advisable to pursue a policy of watchful waiting, one must not allow a woman to remain in labor too long. We should not wait to see what a patient can endure; but simply what she can accomplish. On the other hand, because the patient makes a great deal of noise, or the family insists that something must be done, do not interfere too soon. If you feel you cannot take care of a patient alone, do not hesitate to call for assistance. Pituitrin should not be used in the first and second stages of labor. We can control the forceps, but not the pituitrin after it has been given.

Of the graver complications very little can be said in this paper. In placenta previa it is important to save blood all the time. One can never tell how much blood the patient will lose before delivery is accomplished. For placenta previa in a primipara or in a multipara, with an undilated cervix, and profuse hemorrhages and a viable child, Cesarean section is advocated. Other forms of treatment are the use of a rubber bag or Braxton Hicks version. Transfusion must not be forgotten as an aid in the treatment of placenta previa. Eclampsia in the home is best treated conservatively. Bleed the patient, give morphine and chloral per rectum and force fluids per rectum. Where it is possible to remove the patient to the hospital, it should always be done. When the patient has had a number of convulsions, the cervix undilated, the child large and near term, I think a Cesarean section is advocated.

The management of the third stage of labor is much more important than most physicians realize; for more women die from accidents occurring in the third stage than during the other two combined. One should treat the third stage as follows:

Wait until signs of placental separation occur. These are:

First: Advance the cord from the vulva.

Second: Rising of the uterus in the abdomen.

Third: The change in the shape of the uterus.

Fourth: The uterus is smaller and harder than before.

If, after thirty minutes, the placenta does not separate, Crede's method may be used. After delivery of the placenta, it should be examined for missing pieces. It is best not to invade the uterus for missing pieces unless there is profuse hemorrhage. It is best to give pituitrin immediately after the baby is born, and ergot as soon as the placenta is expressed. By doing this, we will have very few cases of postpartum hemorrhage. If hemorrhage does result after removal of the placenta and the latter is complete, the bleeding is either due to laceration or to atony of the uterus. If due to laceration, immediate repair should be done. If bleeding is due to uterine atony, the pituitrin or ergot does not suffice, give pituitrin direct into the uterine muscles through the abdominal wall. As a last resort the uterus should be packed and the packing removed after twenty-four hours.

When the third stage is over, the perineum should be inspected for lacerations and repaired immediately.

During the puerperium the patient should be watched for signs of infection; the diet should be looked after, and the bladder and bowels kept empty. The

breast and nipples are to be watched and the latter kept especially clean. Cracked nipples treated with Tr. benzoin or silver nitrate. If the breast becomes engorged and tender, apply a tight breast binder and ice bags. If a pelvic infection should arise, elevate the foot of the bed, place ice bags on the uterus, give ergot, force water and prescribe saline purgative.

After discharging the patient, have her report at the end of six weeks for final examination.

PYELITIS IN CHILDREN

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Pyelitis is an often overlooked cause of fever in children, being diagnosed as bowel trouble, teething, food poisoning, pneumonia, appendicitis, etc., and because of the fact that it usually subsides of its own accord, further obscures the diagnosis.

Pyelitis is essentially a disease of the diaper age, beginning the latter part of the first year, and increasing in frequency until the latter part of the second year, when the incidence decreases with the age of the child. It occurs most frequently in summer, associated with gastro-intestinal disturbances, and in the winter with upper respiratory infections. Girls are much more frequently attacked than boys, seventy-five to one hundred percent, by different observers. There appears to be no natural or acquired immunity. One attack predisposes to another, instead of producing an immunity. Some observers think that the infection remains in quiescent stage for long periods of time.

The pathology is a much discussed question, because of the low mortality, and because of the destructive action of the urine on the mucosa after death. All investigators, however, find little pathology in the pelvis of the kidney. In a recent article, Wilson and Schloss, of New York, reviewed the post-mortem examination of forty-nine children and infants whose urine contained pus during life, some as long as two years before death, and in only two, was there definite evidence of inflammation of the pelvic mucosa. In practically all, there was definite evidence of suppurative interstitial nephritis. In those who had recovered from so-called pyelitis, there were scars found, showing that there had been a suppurative interstitial nephritis.

There are three theories in regard to the mode of infection, and none have been proven:

First, is the hematogenous or blood borne.

Second, ascending through the urethra, bladder and ureters. In a recent article by Helmholz in the American Journal of Pediatrics, he concludes from experiments on rabbits that infection takes place by the ascending route in infants. This is most generally accepted because of the greater number of cases in girl's incompetency of ureteral valves, and the fact that the blood stream can be infected from the pelvis.

Third, that the infection is conveyed by lymphatics.

In no disease are the symptoms more varied than in pyelitis. The symptoms are not localizing. Usually, the disease begins with high fever, vomiting, pallor and restlessness, or the child may present no other symptom than fever. In some cases, bladder symptoms are present with frequent and painful urination, but most often these symptoms are entirely absent. There is usually little or no lumbar tenderness.

With identical findings in the urine, one case may appear perfectly well, except for high fever, and another may have marked systemic manifestation, characterized by coma nausea, vomiting, diarrhea, rigidity of the neck, rapid respiration and pulse. These are often mistaken for pneumonia, meningitis, etc. The temperature is usually remittant, sometimes not going above 100, and in others running as high as 106; or the temperature may suddenly jump up, due to a blocking of the ureter with pus, and subside with relief of the obstruction, with a shower of pus in the urine.

The microscopical examination of the urine is the most diagnostic factor. All urine in children, especially girls, contains pus in a centrifuged specimen. In health, in the uncentrifuged, in boys, there are not more than four to six cells in a low power field; in girls, six to eight. Unless there are fifteen or more cells to the field, one is not warranted in making a diagnosis of pyelitis. Then the condition of the external genitals and the method by which the urine was obtained should be taken into consideration. Numerous bacteria in a very fresh specimen is also generally considered diagnostic.

The most common organism is the colon bacillus. If not the primary organism, it practically always predominates later. A diagnosis cannot be made on the examination of one specimen of urine, for there may be a blocking of the ureter, and no pus cells found, when the next day it may be loaded with pus. The urine is usually highly acid and contains varying amounts of albumin, depending on the amount of pus. Very seldom will casts of red blood cells be found.

The most important part of the treatment is washing out of the urinary tract, by giving water. This is sometimes difficult because of vomiting, or the child may be so toxic that it cannot take water. Then the stomach tube may be used, or water given in small amounts, frequently plain, or water sweetened with saccharine with lemon or orange juice added, is best. At least a quart of water in addition to the food should be given to an infant in twenty-four hours. If it is necessary to use the rectum, sixty to one hundred c.c., high in the sigmoid should be given every four hours. Children stand this better than if given by the Murphy drip. Sodium bicarbonate can be given by this route. If it is impossible to use either the rectal or oral route, the peritoneal route is to be preferred. One hundred to four hundred c.c. of fluid may be given every six hours, depending on the size of the child. The injection may be continued until the abdomen is definitely tense. If these are not available, the 7 percent glucose or physiological salt solution may be given subcutaneously or intravenously.

The alkaline treatment is the most satisfactory in conjunction with water. Alkalies in the form of sodium citrate or sodium bicarbonate, in doses of ten grains each, every four hours, and doubled each day until the urine is definitely alkaline, may be used for a child under six months. When the urine is alkalinized, the temperature usually drops to normal. Alkalinization probably does good because of its effect on the tissues and its diuretic effect, because sufficient alkalinity can not be produced to inhibit the growth of bacteria. Even though the temperature drops, the urinary re-findings remain the same for several days.

Of the urinary antiseptics, urotropin has given best results. It is very desirable in chronic cases, but after the acute stage, some have an idiosyncracy to it, small doses producing hematuria and vomiting. Its action depends on the liberation of formaldehyde, and this occurs in acid urine.

The dose depends on the nerve of the physician. When I was in Boston several years ago, they were advising 90 grains per day to a child eight months old, disregarding the hematuria.

Local treatments have been used with good results, but catheterization of an infant's ureter is difficult and must be done under general anesthetic.

Vaccines have not proved very beneficial.

The general treatment consists of rest in bed, until the fever has entirely subsided, and in severe cases, seven to ten days longer. Very light diet should be given, and local pain and tenderness treated by hot applications and opiates.

The child should not be considered cured until several urine examinations are free from pus and bacteria.

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CONSTITUTIONAL FACTORS IN CAUSATION OF STERILITY

Samuel R. Meaker, Boston (Journal A. M. A., May 4, 1929), found that the constitutional states that cause a depression of fertility fall into four general groups: endocrine disorders, chronic intoxications, metabolic faults of extrinsic origin, and conditions of general debility. In twenty-five cases, 112 causative factors were demonstrated, an average of 4.5 factors per case. No case shows less than two factors; some show as many as seven. Of the 112 causative factors thirty-seven or 33 percent, are on the male side, and seventy-five, or 66.9 percent, are on the female side. Of the 112 factors thirty-nine, or 34.8 percent, are constitutional, and seventy-three, or 65.1 percent, are local. Of the thirty-seven male factors twenty-two, or 59.4 percent, are constitutional, and fifteen, or 40.5 percent, are local. Of the seventy-five female factors seventeen, or 22.6 percent, are constitutional, and fifty-eight, or 77.3 percent, are local. Three cases show absence of constitutional factors in both partners. Seven cases show these factors in the male alone, three in the female alone, and twelve in both partners. No case shows absence of local factors in both partners. Fifteen cases show these factors in the female alone and ten in both partners. He concludes that in cases of sterility, multiple causes are the rule rather than the exception. The male carries a share of the responsibility in the great majority of cases. Constitutional factors depressing the fertility of one or both partners are operative in a large proportion of cases. The incidence of constitutional faults is greater in the male than in the female; on the male side, constitutional faults are commoner than local faults. The intelligent management of sterility demands as a routine, in addition to gynecologic and urologic investigation, a comprehensive survey of the constitutional states of both husband and wife.

THE JOURNAL

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Medical Arts Building, Tulsa, Okla.

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Articles sent this Journal for publication and all those read at the annual meetings of the State Association are the sole property of this Journal. The Journal relies on each individual contributor's strict adherence to this well-known rule of medical journalism. In the event an article sent this Journal for publication is published before appearance in the Journal, the manuscript will be returned to the writer.

Failure to receive The Journal should call for immediate notification of the editor, Barnes Building, Muskogee, Oklahoma.

Local news of possible interest to the medical profession, notes on removals, changes in address, births, deaths and weddings will be gratefully received.

Advertising of articles, drugs or compounds unapproved by the Council on Pharmacy of the A. M. A., will not be accepted.

Advertising rates will be supplied on application. It is suggested that wherever possible members of the State Association should patronize our advertisers in preference to others as a matter of fair reciprocity.

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EDITORIAL

CANCER, THE DANGER OF MANIPULATION AND MASSAGE

Well informed physicians, especially surgeons, are called upon to deal with many phases of malignancy, and have noted for many years and incessantly called attention to the danger of manipulation and massage and other types of irritating treatment of pre-cancerous and cancerous growths. It is not necessary to warn the well informed of these dangers for they always bear them in mind, but we still have with us the "cancer quack," the cults and especially the osteopaths and worse than that the chiropractors, who are the main offenders in precipitating to the stage of incurability, a condition which might be curable, or at least alleviated for many years by faithful and proper management.

Horsley[1] in considering the treatment of cancer lays special stress upon the ease of production of metastases. He especially points out the great aid in the treatment of cancer by the recent system of grading of malignancy as proposed by A. C. Broders, of The Mayo Clinic. Horsley thinks, and rightly, that according to the grading scale, that a malignant growth, grade one, may be easily ended by a very local operation; whereas cancer with histologically less differentiated cells require extensive operation, bolstered up by radiology in order to effect a cure. Experimentally, Knox, Tyzzer and Marsh have shown that in mice, massage of a malignant tumor either transplanted or spontaneous produces more frequent and more extensive metastases than in controls in which the growth is not massaged.

There should be some way, if the chiropractors and osteopaths will not be educated, to at least warn them of the danger of manipulation of tumors. Tumors of the leg, and tumors of the breast which have been massaged, and the rubbing in of ointments, provide a distinctly more unfavorable prognosis than if such had not been applied. Surgeons are constantly noting that concers which have been "tinkered" with often come to a fatal end, while those histologically a great deal more malignant but which had been treated by means other than massage, were free from recurrence years after operation.

As to the "cancer quack" or the foolish doctor, who is not ordinarily considered a quack in the locality in which he lives, who still persists in applying arsenic pastes and similar often useless irritants, there seems to be no hope except to let them pursue their course of destruction upon their gullible clientele. Within the last few years the writer has had his attention called to a number of cases of cancer so treated. Probably all of these cases, treated properly in the first place would have recovered, but due to the type of treatment they received, a fatal outcome was assured.

More intelligent people who have small growths, benign tumors or a history of cancer in their family are easy to interest in this matter. Perhaps it might be well to occasionally hold a clinic or a meeting

against cancer and to which should be invited every person interested.

1. Research and Medical Progress and Other Addresses, by J. Shelton Horsly, M.D., Attending Surgeon, St. Elizabeth's Hospital, Richmond, Va. C. V. Mosby Company, 1929.

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THE NEXT ANNUAL SESSION, SHAWNEE, MAY 26, 27, 28, 1930

The above dates have been selected as the best available for the next Annual Session.

We wish to make the following statement for the information of our membership.

The General Chairman, who will select local committees and who will have charge of all local arrangements, is Dr. R. M. Anderson, Shawnee.

We are very fortunate in having secured a building with more than enough large rooms to accommodate each section and all the exhibits, at the same time and without crowding on one floor.

The Council will meet at 3:00 p. m., May 26th; the House of Delegates at 7:30 p. m., May 26th and 8:00 a. m., May 27th.

The invited guests so far are Drs. C. M. Rosser, Dallas; Austin A. Hayden, Chicago, treasurer of the American Medical Association, and C. M. Sistrunk, Dallas.

The General Session, open to the public, at which the president's address, the address by Dr. Rosser and probably other short addresses will be delivered, will be held Tuesday evening, May 27th. Wednesday evening, May 28th, will be held orations on medicine, delivered by Drs. H. Coulter Todd, Oklahoma City; W. P. Fite, Muskogee; and D. W. Griffin, Norman, after which will follow the president's reception and dance.

Arrangements will be made for daily clinics on orthopedic surgery, these to deal with the simple problems of fractures and joint injuries. The director of these clinics will be Dr. Willis K. West, Oklahoma City, and such other assistants as he selects. The physicians of Shawnee will announce later the presentation of certain dry clinics, both medical and surgical. Some of these will likely be in charge of Dr. Sistrunk and others.

Hotel headquarters will be the Aldridge Hotel.

ENID HOSPITALS AND MEDICAL RESOURCES

This issue is devoted practically in entirety to the production of Enid physicians. In connection with this, Enid, medically, would not be represented without some notice of its outstanding hospital resources. Considering the population, which is approximately 35,000, Enid at this time is one of the best supplied cities of its size in the United States, in so far as its hospital facilities and medical profession is concerned. The writer made a personal visit to all the hospitals of Enid a few years ago at which time they were filled to capacity and with unusually important cases.

Enid hospitals are as follows:

UNIVERSITY HOSPITAL

The University Hospital was organized by Dr. S. N. and Dr. E. A. Mayberry in 1908. At the present time it is owned and operated by Dr. S. N. Mayberry.

This hospital has gradually grown until at the present time it has a capacity of fifty beds. It maintains a training school for nurses and is affiliated with Phillips University.

STAFF

Dr. S. N. Mayberry, Chief Surgeon.

Dr. Paul B. Champlin, Surgery and Diagnosis.

Dr. D. D. Roberts, Obstetrician.

Dr. W. H. Rhodes, Eye, Ear, Nose and Throat Specialist.

Dr. W. A. Aitken, Surgery and Internal Medicine.

Dr. J. W. Baker, General Medicine.

Dr. R. C. Baker, General Medicine.

Dr. B. T. Bitting, Internal Medicine and Nervous Diseases.

Dr. Glenn Francisco, General Medicine and Consultant.

Dr. J. W. Francisco, General Medicine and Consultant.

Dr. O. R. Gregg, Urologist.

Dr. W. L. Kendall, Internal Medicine and Surgery.

Dr. W. P. Nielson, Surgery and Internal Medicine.

Dr. J. W. Moore, General Medicine.

Dr. J. M. Watson, General Medicine and Diagnosis.

Dr. J. R. Walker, Eye, Ear, Nose and Throat.

ENID GENERAL HOSPITAL

The Enid General Hospital was organized as a corporation in 1910 under the laws of the State of Oklahoma. It has

gradually grown until today it is the fifth largest hospital in the State. The present capacity of the hospital is 100 beds.

This hospital maintains a training school for nurses with a full time instructress in charge.

In the east wing of the hospital are the offices of the Enid clinic.

STAFF

Dr. F. A. Hudson, General Surgery.
Dr. W. E. Lamerton, Internal Medicine.
Dr. A. L. McInnis, Gynecology and Obstetrics.
Dr. Julian Field, Obstretrics and Diseases of Children.
Dr. S. H. McEvoy, Anaesthetist and Metabolism.
Dr. A. S. Piper, Eye, Ear. Nose and Throat.
Dr. H. H. Hudson, Assistant in Surgery.
Earl E. Cary, Laboratory Technician.
R. A. MacDonald, Business Manager.
Rose L. Dunning, R. N., Superintendent.
N. G. Jung, R. N., Surgical Supervisor.
Sue Travis, R. N., B. S., Instructress.
L. M. Gleason, Field-Secretary.

ENID SPRINGS HOSPITAL

Enid Springs Hospital is geographically located in one of the most beautiful parks in the State of Oklahoma, that being the Government Springs Park, a forty acre tract in the center of the city of Enid.

The hospital consists of fifty-six rooms, modern in every particular, containing one of the best equipped physiotherapy departments in the State, while across the street are the offices, nurses home and clinical buildings.

It was founded in 1914 by Dr. G. A. Boyle, past-president of the Oklahoma State Medical Association. It has been owned by T. B. Hinson since 1921, and operated by the following staff: Dr. T. B. Hinson, Dr. J. R. Swank, Dr. I. V. Hardy, Dr. P. B. Gardner, Dr. P. P. VanArsdel, Dr. M. E. Sheets and Dr. Geo. A. Landers.

INDEPENDENCE HOSPITAL

January 1, 1927, four physicians joined themselves together for the practice of medicine in Enid, and formed the North Independence Hospital Corporation, and on July 1, of the same year, they moved into their new combination office and hospital building, at 502 North Independence.

This structure is a two and one-half story brick, semi fire-proof, facing on North Independence and West Pine, two blocks north of Enid's new hotel. The basement houses the laboratory, physiotherapy, and culinary departments. The offices and X-ray are on the first floor, while the entire second floor is given over to hospital rooms, all patients having private rooms, of which there are twenty-two.

The original plant contained twelve beds with two wards of two beds each, but in May, 1928, an addition became necessary and other rooms were added.

The group working at this hospital with their offices in the building are as follows:

W. B. Newell, M.D., Medicine and X-ray.
V. R. Hamble, M.D., Genito-Urinary and Anaesthetist.
P. W. Hopkins, M.D., Eye, Ear, Nose and Throat.
C. W. Tedrowe, M.D., Surgery.
Miss Lillian Bailey, R.N., Superintendent.
Mrs. Anna Johnson, R.N., Night Nurse.
Miss Elsie Reed, Office Secretary.
Miss Daisy Crane, Laboratory Technician.

Through hard work and close application, the hospital has grown steadily in influence to the community.

Editorial Notes—Personal and General

DR. A. J. WEEDN, Duncan, attended a meeting of the American College of Surgeons at San Antonio, in January.

DR. W. ALBERT COOK, Tulsa, visited balmy Texas coast points in January for the purpose of hunting ducks. After nearly freezing he came back home.

DR. J. W. SHELTON, of Ardmore, announces his removal to 1013 Medical Arts Building, Oklahoma City, his practice being limited to eye, ear, nose and throat.

DRS. L. S. WILLOUR, McAlester, and WILLIAM P. FITE, Muskogee, attended the branch meeting of the American College of Surgeons at San Antonio in January.

DR. C. M. COCHRAN, Okemah, is reported suffering from an injured foot sustained when his horse slipped and fell. Dr. Cochran's leg was pinned beneath the horse.

THE AMERICAN MEDICAL ASSOCIATION will hold its eighty-first session in Detroit, June 23-27, 1930. Registration and exhibits will be held in the Drill Hall of the Masonic auditorium.

BRYAN COUNTY MEDICAL SOCIETY elected the following officers at a recent meeting: Dr. A. J. Wells, Calera, president; Dr. C. G. Price, Durant, vice-president; Dr. James L. Shular, Durant, secretary.

DR. LUCILE SPIRE BLACHLY, Oklahoma City, formerly director of the State Bureau of Maternity and Infancy, has gone to Jacksonville, Florida, where she will be connected with the state health department.

CRAIG COUNTY MEDICAL SOCIETY elected officers for 1930: Dr. C. S. Neer, Vinita, president and alternate; Dr. J. F. Walker, Grove, vice-president; Dr. W. R. Marks, Vinita, secretary; Dr. F. M. Adams, Vinita, delegate.

SEMINOLE COUNTY MEDICAL SOCIETY met December 16th, 1929, and elected the following officers for 1930: Dr. T. A. Hill, Seminole, president; Dr. W. S. Martin, Wewoka, vice-president; Dr. T. H. Briggs, Wewoka, secretary-treasurer.

TULSA COUNTY MEDICAL SOCIETY elected the following officers for 1930: Dr. J. Franklin Gorrell, president; Dr. W. A. Dean, vice-president; Dr. Carl F. Simpson, secretary-treasurer; Drs. H. W. Ford, N. R. Smith and W. S. Larrabee, censors.

LEFLORE COUNTY MEDICAL SOCIETY held their monthly meeting at Poteau, December 12, 1929, electing the following officers for 1930: Drs. W. L. Shippy, Wister, president; E. M. Woodson, Poteau, vice-president; W. F. Lunsford, Poteau, secretary-treasurer.

DR. E. E. RICE, well known Shawnee physician, is reported critically ill at his home. Dr. Rice suffered injuries last October when he drove his car into an oil train near Oklahoma City. Improving slightly after the accident, Dr. Rice has grown steadily worse during the last two months.

Dr. G. E. STANBRO, Pawhuska, is in Europe taking post-graduate work. He will be in Vienna until September, 1930. On returning to America he will reside temporarily in Philadelphia where he will take up the study of surgery in the University of Pennsylvania Post-Graduate School of Medicine for one or two years.

DR. RAY M. BALYEAT, Oklahoma City, announces the removal of the Balyeat Hay Fever and Asthma Clinic to 600-620 Osler Building, 1200 North Walker, and the addition to his staff of Dr. Fannie Lou Brittain. Dr. Brittain will give special attention to urticaria, migraine and the allergic types of eczema and colitis.

AT ANNUAL MEETING of the Staff of St. John's Hospital, Tulsa, January 21st, the following officers were elected for 1930: Dr. C. H. Haralson, president; Dr. J. Fred Bolton, vice-president; Dr. W. F. McAnally, secretary. The Board of Governors is as follows: Drs. Samuel Goodman, Fred A. Glass, C. D. F. O'Hearn and D. M. Macdonald.

JEFFERSON COUNTY MEDICAL SOCIETY elected the following officers for 1930: Dr. J. I. Hollingsworth, Waurika, president; Dr. J. M. McPherson, Terral, vice-president; Dr. J. I. Derr, Waurika, secretary-treasurer; Dr. W. M. Browning, Waurika, delegate to the state meeting; Dr. L. L. Wade, Ryan, alternate.

CUSTER COUNTY MEDICAL SOCIETY met December 11, 1929, and installed the following officers for 1930: Dr. Gordon D. Williams, Weatherford, president; Dr. Frank H. Vieregg, Clinton, vice-president; Dr. E. E. Darnell, Clinton, secretary-treasurer, and delegate to state meeting; Dr. Ellis Lamb, Clinton, alternate; Dr. C. J. Alexander, Clinton, censor.

McINTOSH COUNTY MEDICAL SOCIETY elected the following officers for 1930, at their regular meeting, December 28, 1929: President, Dr. J. H. McColloch, Checotah; vice-president, Dr. F. L. Smith, Eufaula; secretary-treasurer, Dr. W. A. Tolleson, Eufaula; censor, Dr. D. E. Little, Eufaula; delegate, Dr. W. A. Tolleson, Eufaula; alternate, Dr. G. W. West, Eufaula.

GARVIN COUNTY MEDICAL SOCIETY elected the following officers for 1930, at a recent meeting: Dr. Hugh Monroe, Lindsay, president; Dr. L. P. Smith, Elmore City, vice-president; Dr. John Calloway, Pauls Valley, secretary-treasurer; Dr. G. L. Johnson, Pauls Valley, delegate; Dr. W. P. Greening, Pauls Valley, alternate; Dr. T. C. Branum, Pauls Valley, censor.

GREER COUNTY MEDICAL SOCIETY met January 24th, at the offices of Dr. J. B. Hollis and installed the following officers: Dr. C. C. Shaw, Mangum, president; Dr. O. R. Jeter, Mangum, vice-president; Dr. J. B. Hollis, Mangum, re-elected secretary-treasurer; Dr. G. Fowler Border, Mangum, delegate to the state convention. Dr. Hollis was selected as alternate.

CADDO COUNTY MEDICAL SOCIETY held their annual meeting in Anadarko, December 30, 1929, and the following officers were elected to serve for 1930: President, Dr. I. S. Butler, Carnegie; vice-president, Dr. Wade H. Vann, Cement; secretary-treasurer, Dr. P. H. Anderson, Anadarko; delegate to the state association, Dr. E. W. Hawkins, Carnegie; censor, Dr. S. E. Williams, Hydro.

KIOWA COUNTY MEDICAL SOCIETY met in regular session on January 2, 1930, at the Nash Hotel, Hobart, and elected the following officers for 1930: Dr. H. C. Lloyd, Hobart, president, Dr. A. H. Hathaway, Mt. View, vice-president; Dr. J. H. Moore, Hobart, secretary; Dr. B. H. Watkins, Hobart, delegate; Drs. J. L. Adams, Hobart, Wm. McIlwain, Lone Wolf, J. D. Ballard, Mt. View, censors.

PAYNE COUNTY MEDICAL SOCIETY elected the following officers for 1930: President, Dr. W. N. Davidson, Cushing; vice-president, Dr. C. E. Sexton, Stillwater; secretary-treasurer, Dr. R. E. Roberts, Stillwater; censors, Drs. D. L. Perry, Cushing; W. B. Hudson, Yale; D. J. Herrington, Cushing; delegate, Dr. R. E. Waggoner, Stillwater; alternate, Dr. H. C. Manning, Cushing; committee on public policy, Dr. R. J. Shull, Stillwater.

COMANCHE COUNTY MEDICAL SOCIETY met January 14th at Lawton and the following officers were elected: President, Dr. P. G. Dunlap; vice-president, Dr. H. A. Angus; secretary-treasurer, Dr. L. W. Ferguson; censor, Dr. L. T. Gooch, all of Lawton. Dr. E. B. Dunlap presented a very interesting paper on "Inflammatory Diseases of the Tubes and Ovaries," which was followed by a general discussion, led by Dr. W. J. Mason.

CARTER COUNTY MEDICAL SOCIETY met January 14th at the Hardy Sanitarium, Ardmore. Dr. F. P. von Keller, president, gave a talk; Dr. R. C. Sullivan read a paper, "Toxemias of Pregnancy." The following officers were elected for 1930: Drs. F. P. von Keller, president; F. A. Harrison, vice-president; R. C. Sullivan, secretary-treasurer; Walter Hardy and Walter Johnson, delegates to the State convention; R. H. Henry and F. W. Boadway, alternates. All of Ardmore.

CLEVELAND COUNTY MEDICAL SOCIETY doctors and their wives were entertained with a luncheon at the Faculty Club, Norman, January 16th, by the retiring president, Dr. Gayfree Ellison and his wife. A paper, "Observation of Post-Volstead Alcoholic Psychosis," by Dr. C. A. Brake, was well received. The following officers were installed: Dr. Charles Rayburn, president; Dr. M. M. Wickham, vice-president; Dr. B. H. Cooley, secretary-treasurer; Drs. C. S. Bobo and B. H. Cooley, delegates to state convention.

MUSKOGEE COUNTY MEDICAL SOCIETY met January 27th and despite the inclemency of the weather more than 30 physicians were present. Dr. Ray M. Balyeat, Oklahoma City, spoke upon "Allergic Diseases, other than Hay Fever and Asthma, including Urticaria, Migraine and Certain Forms of Eczema and Colitis." Dr. H. H. Turner, Oklahoma City, spoke and illustrated his subject, "Endocrinology in General Medicine." Dr. Turner pointed out that many cases, heretofore considered hopeless, are easily amenable to treatment and great benefit if a proper diagnosis is made and especially if it is made at the proper time.

POTTAWATOMIE COUNTY MEDICAL SOCIETY elected the following officers at their annual meeting, January 18th: Drs. J. E. Hughes, Shawnee, president; J. I. Gaston, Shawnee, vice-president; R. C. Kaylor, McCloud, second-vice-president; T. C. Sanders, Shawnee, third vice-president; Wm. M. Gallaher, Shawnee, secretary-treasurer. The out-going president, Dr. Eugene Rice, gave an address on "The Treatment of Fractures." Rev. I. W. Armstrong, pastor of the M. E. church, South, gave an interesting talk on "The Physician As Seen by the Layman." Dr. C. A. Thompson, Muskogee, secretary of the Oklahoma State Medical Association, gave a very instructive talk on "Some Phases of Surgery—Fractures, Anesthesia."

WASHINGTON COUNTY MEDICAL SOCIETY held their annual banquet meeting, January 14, at Bartlesville, and elected the following officers for 1930: Dr. W. H. Kingman, Bartlesville, president; Dr. F. S. Etter, Bartlesville, vice-president; Dr. J. V. Athey, Bartlesville, secretary; Dr. J. P. Vansant, Dewey, treasurer; Drs. W. H. Kingman and J. V. Athey, delegates to State association; Drs. O. S. Somerville and W. E. Rammel, both of Bartlesville, alternates. The following program was presented: Master of Ceremonies, Dr. L. D. Hudson; Invocation, Rev. Paul C. Payne; Dinner; Valedictory, Outgoing President, Dr. G. V. Dorsheimer; Salutatory, Incoming President, Dr. W. H. Kingman; Vocal Solo, Mrs. W. P. Ringo, accompanied by Mrs. E. L. George; Reminiscences, Dr. O. I. Green; Doctors, From the Viewpoint of a Doctor's Wife, Mrs. F. S. Etter; Address, Rev. Paul C. Payne; Three Minute Talks, various physicians.

THE AMERICAN SOCIETY for the Control of Cancer has generously booked the wonderful Dr. Canti cancer movie film for showing in the State of Oklahoma for a fifteen-day period, beginning April 7th. The exact places of showing have not yet been arranged. Any county medical society or groups of county societies that desire the showing of this film should get in communication with Doctor E. S. Lain, state chairman, Medical Arts Building, Oklahoma City, at once that the schedule may be arranged as early as possible.

DR. WILLIAM B. MEAD

WHEREAS, Dr. W. B. Mead, a member of the Comanche County Medical Society, was taken by death September 12, 1929, and

WHEREAS, The Comanche County Medical Society sustained the loss of one who was an active and honored member, the medical profession has lost one who always contributed to its ethics and dignity and the community was deprived of the services of a respected citizen and physician.

BE IT RESOLVED, That a copy of these resolutions be sent to his bereaved family, to the Journal of the Oklahoma State Medical Association and be spread upon the minutes of the Comanche County Medical Society.

TUBERCULOSIS

Edited By
L. J. Moorman, M.D. and Floyd Moorman, M.D.
912 Medical Arts Bldg., Oklahoma City

Relation of Vincent's Angina to Fusospirochetal Disease of the Lungs, David T. Smith, M.D. J. A. M. A., Vol. 94, No. 1.

Three cases are reported which followed contact with cases of Vincent's Angina, two of which were primary infections of the pharynx with subsequent extension into the lungs, and one case was primary in the lungs and began four days after contact with a case of Vincent's Angina.

Fusiform bacilli and spirochetes were demonstrated in the sputum of all three cases. Recovery was prompt after the administration of sulpharsphenamine.

The complicating pulmonary lesions which follow Vincent's Angina may take the form of pulmonary gangrene, pulmonary abscess, ulceration of the bronchi, lobar and bronchopneumonia and empyema; and these conditions are often confused with pulmonary tuberculosis.

Many of the patients with pulmonary lesions recover spontaneously, but in some the condition terminates fatally. The author recommends the early administration of neoarsphenamine or sulpharsphenamine in all cases in which the organisms can be demonstrated in the pulmonary sputum.

Benign Neoplasms of the Bronchus. Report of a Case of Fibrolipoma of the Left Main Bronchus Removed through the Bronchoscope by M. C. Myerson, M.D., New York.

In the past few years, the bronchoscope has proved to be an increasingly important factor in the observation and removal of neoplasms. Benign neoplasma are benign only in the histologic sense. As they grow they cause obstruction of the air passage and interfere with the respiratory function and the vital capacity of the individual; they also favor the production of bronchiectasis in the structures which are distally located. Up to the present time, there are records of ten neoplasms that have been removed bronchoscopically.

The author cites one case from his own experience in which a patient with pulmonary symptoms was treated for tuberculosis, asthma, chronic pulmonary fibrosis and myocarditis without any improvement. At the end of a year of illness he was referred for bronchoscopic study, which revealed the presence of a fibrolipoma in his left main bronchus. Upon the fourth bronchoscopy, complete removal and extraction of the tumor was accomplished, and six weeks later the patient was back at work.

This case demonstrates the importance of including bronchoscopy in the study of pulmonary conditions with obscure or atypical symptoms.

Spontaneous Nontuberculous Pneumothorax in Infancy and Childhood. A Review of the Literature with Three Additional Cases, by E. Gordon Stoloff, M.D., New York City.

After a careful review of the literature from 1844 to the present date, the author finds only 84 cases of spontaneous pneumothorax of nontuberculous etiology. Tuberculous disease of the lungs and pleurae is a frequent cause of spontaneous pneumothorax; in adults it is estimated as being the etiologic factor in 90 percent or more of the cases, in children it is considered as causing about 40 percent of them.

The relative frequency of the different types of nontuberculous etiology, as represented on the basis of the 84 cases is as follows: pneumonia, 30; gangrene, 11; emphysema, 11; pertussis, 4; congenital defect, 4; lung abscess, 3; bronchiectasis, 3; foreign body, 3; lung apoplexy, 3; empyema, 1; and others including typhoid, influenzal bronchitis, rupture of pleura and tear of the lung.

Expressed in terms of pathogenesis, pneumothorax may be caused by rupture (a) following degeneration or (b) due to congenital or mechanical defect of the lung.

The roentgenogram is usually so characteristic as to make the diagnosis unmistakable. Pneumothorax is seen as partial or total, unilocular or multilocular.

The author adds three cases of nontuberculous spontaneous pneumothorax to the literature; all were post pneumonic, simple, and made uneventful recoveries. Their recognition was made on the basis of roentgenography; they were characterized by a sparsity of clinical manifestations and signs which probably would not have sufficed for a diagnosis in the absence of the roentgenograms and fluoroscopy.

ORTHOPAEDIC SURGERY

Edited by Earl D. McBride, M.D
717 North Robinson Street, Oklahoma City.

Treatment of Ankle Sprains. Charles P. Hutchins. Boston Med. and Surg. Journal, CXCVII, 91 July 21, 1927.

In his article on ankle sprains, Hutchins first inventories the pathological possibilities, that is, the extent to which ligaments and tendons may be involved without fracture or dislocation of bone.

Sprain of the ankle is most often caused by unguarded movement, by which the foot is turned suddenly inward (rarely outward), with sufficient force to rupture the ligaments, and possibly some of the fibers of the muscles, and to strain the tendons and sheaths.

An anatomical consideration is presented by the author to demonstrate that eversion sprains are much less common, due to the arrangement of structures about the ankle joint. He states, too, that when the foot is at a right angle to the lower leg, or when dorsally flexed to a lesser angle than that, sprains at the ankle joint are rare.

Treatment consists of strapping, the following technique being that employed by Hutchins.

"The patient is seated upon a table at such a level that his depending foot hangs six or eight inches lower than the knee of the operator, who sits facing him. With adhesive straps one and one-half inches wide cut to length, the patient's foot is placed upon the operator's knee so that the ankle is dorsally flexed to eighty or eighty-five degrees from the long axis of the tibia and rests the full weight of the extremity upon the head of the fifth metatarsal. The patient's leg must be wholly passive. This leaves the leg on straight alignment from hip to ankle joint, and throws the foot into slight eversion. The first strap runs spirally around the lower calf on the medial side, across the instep and cuboid, under the sole, falling into a natural sweep on the dorsum. This is the salient control of the hypermobility. The second strap is a counterpart in the opposite direction, acting to limit eversion, and balancing the first. The third support is a stirrup from the middle calf, and passes in the lateral plane of the ankle joint. The fourth and narrow strip retains the third support in contact with the leg at its isthmus above the malleoli. It is imperative that the patient's leg be maintained in the same posture throughout the dressing, and his muscle action inhibited."

When the joint is firmly held by support, the patient is encouraged to walk; for functional use. if it does not cause further injury, is the best stimulant to repair. When the angle between the foot and the lower leg exceeds ninety degrees, the plaster is changed. Diathermy is used in conjunction with the strapping.

Acute Infective Osteomyelitis Treated by Conservative Methods. H. H. Brown. Lancet I, 928, April 30, 1927.

An attempt was made to save the diaphysis by "thorough disinfection of the bone."

Boy, aged six, admitted June, 1921. Had fallen and bruised left tibia six days previously. Temperature 105. Pulse 160. Left leg swollen, red, acutely tender.

Operation: Incision along whole length of inner surface of shaft of tibia. Whole of diaphysis bathed in pus, periosteum everywhere separated. Pus was washed away, surface of bone and periosteum scrubbed with gauze soaked in 1 to 20 carbolic, then methylated spirit, then ether and packed off with gauze. The shaft of the bone similarly cleaned with carbolic, spirit and ether. Slips of gauze soaked in bipp were placed between the periosteum and the bone, and the cavity was also stuffed with gauze soaked in bipp.

The following day the temperature fell to normal and all oedema, redness and tenderness had disappeared. The gauze packing was removed after three days. The diaphysis retained its vitality and no involucrum was formed round it.

A small sequestrum about three-quarters inch in length was extruded from the upper end of the tibia.

At present time the leg appears normal, except for the operation scar. A radiograph shows that the tibia is also normal in structure, and that there is no thickening or deformity.

Exostosis. Henry W. Meyerding. Radiology, VIII, 282, April 1927.

Exostoses are grouped with the benign osteochondromas. From the X-rays can be determined the diagnosis; size, shape and position, and the progressive growth and structural changes. The author believes that heredity and metabolic changes in childhood are among the more important, and trauma a less important etiological factor. Seventy-nine and seven-tenths percent of exostoses and seventy-five percent of sarcomas occur between the ages of eleven and forty years.

The symptoms are usually painless swelling or deformity with mild tenderness on deep pressure; occasionally dull, steady, localized pain. Blood examination, Wassermann, and urinalyses were usually negative.

The exostoses were widely distributed. The lower ends of femur and tibia, the upper ends of humerus and tibia, are the favorite sites, in the order named. Sarcoma has a somewhat similar distribution. The cortical point of origin is usually in the diaphysis near the epiphyseal line. The mass is pedunculated or sessile. The cortex may appear continuous with that of the tumor and medullary bone may be continued into it. Cartilage usually caps the head and often presents a cauliflower-like appearance. A bursa covers the well formed tumors. There is no invasion of surrounding tissues. Bone is not absorbed, except as the tumor causes pressure on neighboring bone. The periosteum covering the tumor is normal. Growth is usually away from the joint.

Treatment is operative removal, if the tumor is causing deformity, inconvenience or pain. Excision, with snug layer closure to prevent hematoma, is usually sufficient. Cauterization or postoperative radiation may be used to insure against recurrence. The bursa and all cartilage must be excised, preferably en masse with the tumor.

The prognosis is good; recurrence in about ten percent. Six case histories and a number of excellent X-ray illustrations are presented.

DERMATOLOGY, X-RAY AND RADIUM THERAPY

Edited by C. P. Bondurant, M.D.
413 Medical Arts Building, Oklahoma City

A Hereditary Ectodermal Dystrophy. H. R. Clouston, Canad. M. A. J., 21:18, 1929.

Six generations of a people of French-Canadian origin, represented by one hundred nineteen cases of hereditary dystrophy were analyzed, forty of which were seen by the author. It was found that the dystrophy followed the laws of mendelian hybrids; that both sexes transmitted it and were affected both alike; and that their offspring carried the dystrophy dominantly. The epidermis itself was involved, and its appendages, and clinical evidence showed that the teeth, the nervous system and those glands of internal secretion, which are of ectodermal origin, were also affected. The condition of the hair, hypotrichosis from birth, was due to failure of philosebaceous system to develop. The dystrophy was inclined to diminish in succeeding generations as a direct result of better living conditions. It occurred less frequently, and was less severe. There are more than six thousand cases estimated in America, according to the author. Illustrative charts and photographs, and a critical review are contained in the paper.

Experimental Investigation on Allergy and Immunity in Trichophyton Infection. E. Rivalier. Ann de dermat et syph. 10:618, June, 1929

Rivalier reviewed the previous work on this subject and added his own experience and findings from his investigation in this infection in guinea pigs. He found that trychopytic infection in these animals when produced by a highly pathogenic form of the organism produced profound tegumental and systemic alterations of an allergic type. Immunity in the strict sense does not seem to be present. Cutaneous manifestations of allergy are sufficient explanation of the response of an animal of a second attempt at reinoculation, and there is perfect accord between the degree of resistance to a new infection and the intensity of the allergy. The greater the sensibility the more marked the cutaneous reaction to the infection and vice versa. The author criticizes the careless use of the trem immunity and so far as trichopython infection is concerned, believes that

allergy is the paramount mode of defense. From the practical standpoint, from this idea the preventative and curative treatment would be fruitless. If it has any effect it would produce a diminution of the allergic tendency and therefore a lowered tendency to the infection.

Etiology of Granuloma Annulare. D. B. Saenz and A. Oteiza, Bol. Soc. Cubaba de dermat. y sifil. 1:12 (June) 1929.

Saenz and Oteiza believe that the conception regarding the etiology of the granuloma annulare must be modified. It should not be considered as a tuberculid, but as a condition of infectious origin, its beginning taking place in the blood vessels. This infection, the author states, may be caused by tuberculosis, syphilis, leprosy, and sometimes a "focal sepsis." Histologic features of granuloma annulare are not true specific. They are a remarkable evidence of the close resemblance often seen in tuberculous, syphilitic and leprosy infiltrations. The histologic feature in itself is not decisive in determining the lesion. Granuloma annulare is an objective morphologic syndrome; the determination of its etiology requires besides the history of the case and routine experimental research, the evolution features of the process. The author has studied five cases of granuloma annulare during the last nine months. Three of the patients were children from 9 to 19 years of age, and two of them were adults, aged 50 and 53, respectively. One would conclude that the disease is not as rare as it has been believed.

The Action of Pastes. G. H. Percival, Brit. J. Dermat., 41:231 (June) 1929.

An investigation of the absorptive power of pastes conducted through a series of experiments with petrolatum, hydrated wool fat, a mixture of zinc oxide 25 percent and petrolatum 75 percent, and a mixture of zinc oxide, hydrated wool fat and petrolatum in the proportions of 25, 37.5 and 37.5 percent respectively, revealed the following results: petrolatum, hydrated wool fat and mixtures of these substances with zinc oxide fail to absorb water from solutions with which they are in contact. Hydrated wool fat apparently does the reverse, and therefore loses a large proportion of its water. Hence, pastes cannot be said to have an advantage over ointments in the treatment of certain skin diseases, because it absorbs watery exudates. But it is in some way due to the alteration of the consistence of the fatty base as a result of the addition of the inert powder. Because certain drugs do not leave fatty bases to go into watery solutions is not evidence that they are inactive when applied in the form of ointment. Some of those which have no tendency to do so possess strong therapeutic action. They probably unite with the oily sebaceous secretion covering the skin surface and in this way form an antiseptic envelope in close contact with living cells, and this union might lead to actual penetration of the cells through the lipoid content of the cell membranes.

Contribution to the Diagnosis and Treatment of Rhinoscleroma. V. R. Sabouraud, Ann. d. dermat. et syph., 10:481, (May) 1920).

Three cases of rhinoscleroma are reported in detail. The diagnosis may be ascertained with certainty by bacteriologic, serologic, and histologic examination. In certain latent forms, complement-fixation and agglutination reactions may reveal the true nature of the disorder. The author states that induration is sometimes absent. In early cases, radiotherapy may cure, but in advanced cases amelioration is the most that can be anticipated. Vaccine therapy is sometimes beneficial, and malarial inoculations and intravenous injections of antimonium tartrate may be tried.

Anatomic and Clinical Studies on the Problem of Syphilitic Infection. G. Marinsesco, Ann. de dermat et syph., 10:618, (June) 1929.

Marinsesco's main theme is a consideration of the question of the existence of a dermatropic and neurotropic strain of spirochaeta pallida. He sets forth and critically reviews the main arguments and leading contributions on the subject.

The author states in detail that of three cases personally observed, in which there were syphilitic lesions in the neuraxis in both parenchymal and interstitial tissues, that such cases do not support the conception of a dual strain of spirochetes. On considering the reasons for the localization of spirochetes in the parenchyma of the brain, Marinsesco records some investigations along electrochemical lines that throw light on the problem. Spirochaeta pallida exists best in an alkaline medium, and it is probable that in parenchymal neurosyphilus, the pH concentration of the neuraxial parenchyma offers optimum electrophysical conditions for the growth of syphilitic organisms.

This research, the author thinks, will offer an argument decidedly in favor of the importance of the terrain in the localization and concentration of spirochetes in the brain. In general paralysis it is probable that the spirochetes have found exceptionally favorable conditions for their growth in the brain. It has already been shown that malaria treatment causes a change in pH concentration toward normal values. In searching for the cause of parenchymal neurosyphilus, the terrain, (its electro-chemical state being one of the important factors) must be given more consideration than the invading organism. It is improbable that spirachaeta pallida has developed special tissue affinities; it is much more likely that it flourishes where environmental conditions are favorable.

THE BACTERIOLOGY OF INFANT DIET MATERIALS

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*New York State Agricultural Experimental Station Bulletins Nos. 153 and 154.

RINGWORM OF THE FEET

One of the biggest problems in public health work that is at the present time interesting college physicians, physical educators, military and industrial organizations, athletic clubs and bathing resorts is epidermomycosis or ring worm. At the University of California, during the fall semester of 1928, when a compulsory physical examination was conducted by Robert T. Legge in collaboration with Lee Bonar and H. J. Templeton, Berkley, California (Journal A. M. A., May 4, 1929), for all freshman entrants, it was found, on carefully searching and examining the toes of 3,105 freshmen, that 52 1-3 percent of the men and 15 1-3 percent of the women were infected with ringworm of the feet. This significant fact is evidence that the incidence of the disease is increasing and that it is very common, having already permeated high schools and secondary schools, wherever gymnasium and bathing facilities exist. From their survey among all upper class men in the University of California, it is safe to estimate that 85 percent of the men who are required to take gymnasium work are infected. The distribution of ringworm infection is nation wide. The University of California draws its student body not only from all over the United States but from the whole world. Many of the students are from India, China and Japan, and it is probable that the fungi may have been imported from these countries. The so-called Hongkong and Shanghai foot is ringworm infection. When scrapings from a patient with ringworm are mounted in from 20 to 30 percent potassium hydroxide and allowed to stand for from two to twenty-four hours, the organisms can be readily found by an experienced observer. It has been found that when these dried and "dead" cultures are replanted they grow abundantly and renew their activity, a fact illustrating that drying is not lethal, and destroying the spores is persistingly difficult. It has been observed that the chief site of infection among students of the University of California is between the toes, particularly in the third and fourth interdigital spaces, very frequently involving the nails. That it may be transferred to the hands, soles, groin and axillae by the towel in drying the body, after the same towel has been used on the feet, is a point worth noting. The clinical types as observed by Legge et al. are chiefly the sodden interdigital, which is most common, then the vesicular and the eczematoid types. In quite a few instances a mixed infection with bacteria takes place and a lymphangitis and adenitis may be present.

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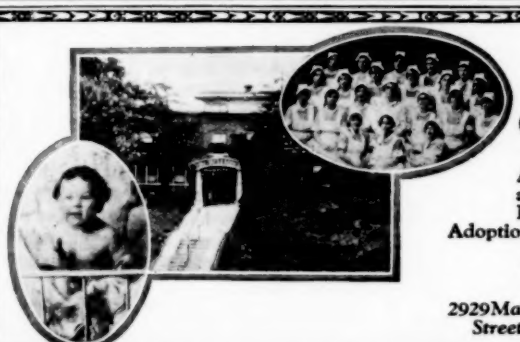

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